

# MISSOURI CONSERVATIONIST

VOLUME 78, ISSUE 7, JULY 2017  
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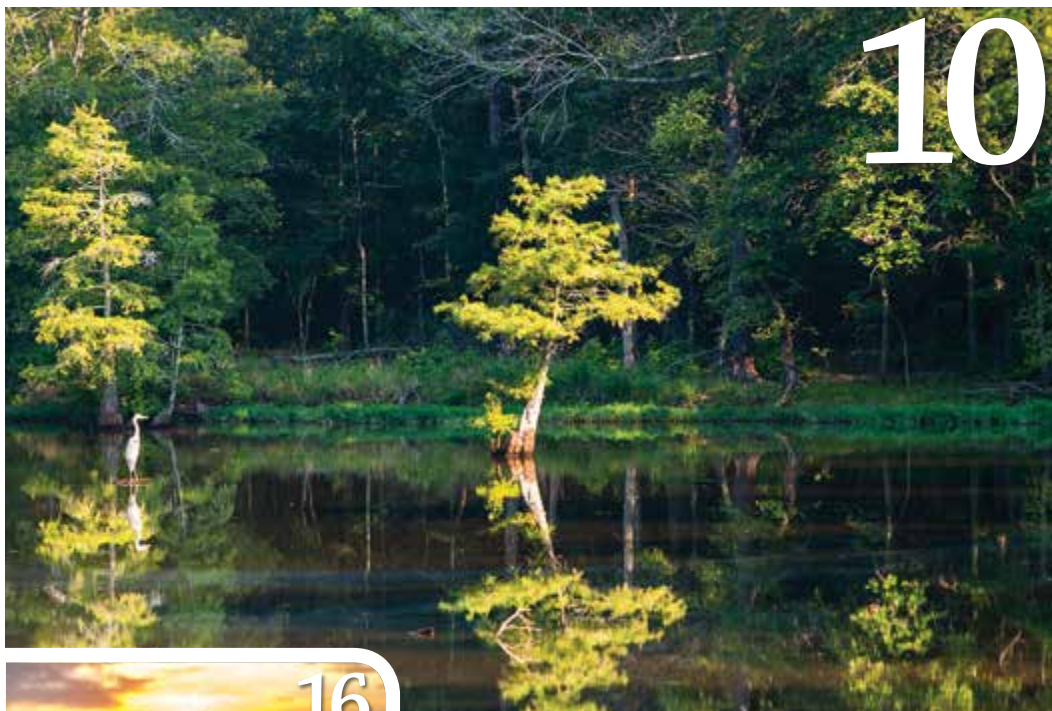
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Great blue heron

## MISSOURI CONSERVATIONIST



### ON THE COVER

Lanceleaf coreopsis  
at Valley View Glade  
Natural Area

📷 **NOPPADOL PAOTHONG**

17-40mm lens, f/16  
1/125 sec, ISO 400

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# Inbox



## Letters to the Editor

Submissions reflect readers' opinions and may be edited for length and clarity. Email [Magazine@mdc.mo.gov](mailto:Magazine@mdc.mo.gov) or write to us:

MISSOURI  
CONSERVATIONIST  
PO BOX 180  
JEFFERSON CITY, MO 65102



## WHAT A PHOTO!

The photo of the agent assisting the girl in the tracked wheelchair is so precious [May, Page 27]. The joy the agent has in her career, and the girl's laughter is a smile generator for sure. The dangling fish is a bonus.

Randall Waring  
O'Fallon

## FOR THE LOVE OF NATURE

We moved to Missouri 10 months ago and picked up a copy of the magazine at a doctor's office. It is a joy to read every month, even though we aren't hunters, fishers, or botanists. It has sparked an old flame to watch and record bird species on our acreage.

Thank you for your beautifully written and exquisitely pictured read!

Marcy Wenberg Brashear

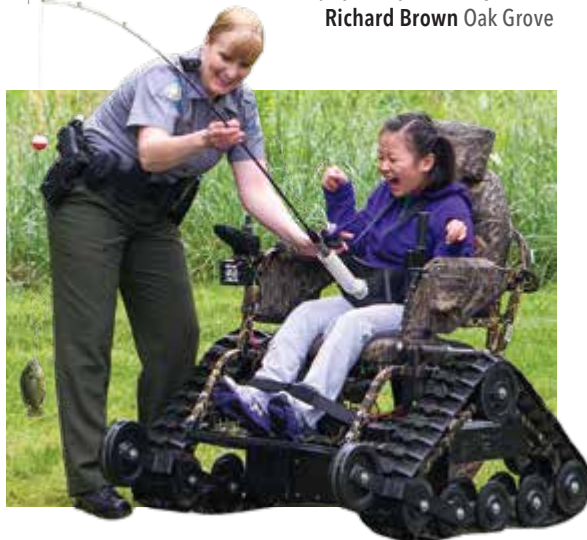
My daughter went out today to throw away a box and found three garter snakes in a breeding ball on some old fencing we had folded up for disposal. It was cool to see up close. Thank you, MDC, for inspiring a love of nature!

Cristy Morgan Adams Sparta

## NATURAL EDUCATION

I would like to thank everyone at MDC for allowing me to enjoy our beautiful state as a handicapped hunter and fisherman. We enjoy the best conservation department in the USA. Thank you for this publication to teach us how to use the resources, even when physically challenged.

Richard Brown Oak Grove



Thank you for your monthly column on the various animals of Missouri.

I am a reading specialist at Bristol Elementary in the Webster Groves School District in St. Louis. This year, I have been using some of the articles you have written on Missouri animals to teach vocabulary and paragraph formation to some of the fifth-grade students with whom I work. The detailed content of your articles and beautiful close-up photographs keep my students engaged, while growing their knowledge of the natural world.

Anita Schneider Webster Groves

My family and I have lived in Missouri for about a year now, and we love everything about this magazine. The articles are educational without being boring and have introduced us to some wonderful places in our new home. We have taken advantage of the classes and activities for families in every issue. They have taken us on adventures in every direction of the state and given us memories with our children we won't soon forget. Thank you for putting out an amazing publication and for allowing the public to take advantage of the best conservation department I have ever seen!

Amanda Hatridge Belleview

## A FISH TALE

Thanks to careful management and stocking of trout in the rivers outside the parks, I was able to land my first brown trout recently after seven years. About 20 minutes after arriving at the water, I hooked into what felt like a great fish. After a few minutes of him staying deep and making big runs all over the river, I brought him to the net and was pleasantly surprised with a beautiful, healthy 18-inch brown! I then caught two more browns in the same pool with the same fly, and ended the day with a powerful 19.5-inch rainbow. Just wanted to share the story and give you a quick thanks for all the careful management you do to help us enjoy these beautiful fish.

Zach Davis via Facebook

PHOTOGRAPH BY DAVID STONNER

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## Have a Question for a Commissioner?

Send a note using our online contact form at [mdc.mo.gov/commissioners](http://mdc.mo.gov/commissioners).





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1

1 | Black-eyed  
Susans by **Julie  
Engel**, via email

2 | Close-up of  
a luna moth by  
**Angelgirlbroken**,  
via Instagram

3 | Bullfrog at  
Clarence Cannon  
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by **Bill Steffan**,  
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2



3

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# Up Front

with Sara Parker Pauley

✕ One of my most treasured memories from this past year is the recent wedding of a dear childhood friend's daughter. I have known this beautiful bride from birth and watched her grow into an amazing woman inside and out. She chose "Aunt Sara's" field for the ceremony, and she wore the wedding veil I had worn many years before, and that my mother had worn decades before that. This veil looked amazing in my mother's wedding pictures, and years later, I tweaked the veil's beading a bit to reflect a different time period, and then, years later still, the veil was tweaked once more to frame a new bride's face, refreshed for a different generation. Pictures will reveal a veil of the same length and fabric, but the inquisitive eye will note the changes that evidence a passage of time.

So, too, the time-treasured *Missouri Conservationist* has gone through some changes of its own, with this edition representing a new chapter. For many, it will look like the same award-winning magazine with its informative articles and breathtaking pictures. But the observer of detail will recognize the nuances.

You'll notice promotions of key department campaigns, more interaction between the magazine and the department's social media, an easily accessible list of natural and department events, highlights of department research, and more of our award-winning photography.

We hope you enjoy this newest format. Yes, it's the same fabric underneath, but we've added some tweaks to adapt to changing times. Something old. Something new.

*Sara Parker Pauley*

**SARA PARKER PAULEY**, DIRECTOR  
[SARA.PAULEY@MDC.MO.GOV](mailto:SARA.PAULEY@MDC.MO.GOV)

The *Missouri Conservationist* (ISSN 0026-6515) is the official monthly publication of the Missouri Department of Conservation, 2901 West Truman Boulevard, Jefferson City, MO (Mailing address: PO Box 180, Jefferson City, MO 65102.) **SUBSCRIPTIONS:** Visit [mdc.mo.gov/conmag](http://mdc.mo.gov/conmag), or call 573-522-4115, ext. 3856 or 3249. Free to adult Missouri residents (one per household); out of state \$7 per year; out of country \$10 per year. Notification of address change must include both old and new address (send mailing label with the subscriber number on it) with 60-day notice. Preferred periodical postage paid at Jefferson City, Missouri, and at additional entry offices. **POSTMASTER:** Send correspondence to Circulation, PO Box 180, Jefferson City, MO 65102-0180. Phone: 573-522-4115, ext. 3856 or 3249. Copyright © 2017 by the Conservation Commission of the State of Missouri.

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[mdc.mo.gov](http://mdc.mo.gov) 3

# Nature LAB

by Bonnie Chasteen

Each month, we highlight research MDC uses to improve fish, forest, and wildlife management.

## CITIZEN SCIENCE

### More Observers, Better Data

✧ In December 2012, Allison Volk noticed a bald eagle nest near her home in Warren County. A member of the Confluence Chapter of the Master Naturalist Program, Volk kept careful observations of the nest and got in touch with MDC Resource Scientist Janet Haslerig.

Haslerig monitors Missouri's bald eagle nests every year. "I depend on observers like Allison to send me detailed information about the existence and success of local nests," she said.

Volk is one of a small army of Missouri citizens who help MDC scientists collect data or restore essential habitat, such as wildflowers for pollinators.

"People who spend time in the same place observe concrete evidence that our world is changing. We can provide a layperson's knowledge to help support science," Volk said.

Tom Kulowiec, MDC's resource science administrative coordinator, explained how citizen scientists like Volk make the agency's science better. "MDC doesn't have enough employees at times to collect all the



Volunteer naturalists help conduct species surveys near Newburg (above) and at Paintbrush Prairie Conservation Area (left).

MDC scientists rely on citizen observations to inform research

information we need. Citizen observers improve the quality of our information."

Collecting and tracking data over time helps MDC know if things are changing, whether due to local influences like habitat loss or to more global influences like climate change. "Getting an accurate idea of habitat and population trends helps us improve management and set better regulations," Kulowiec said.

## Missouri Observers by the Numbers

**4,436**  
active Stream Teams in Missouri



**Over 88,000**  
Stream Team members act as citizen scientists statewide

**9,709**  
Number of turkey brood observation volunteers

**9,320**  
Number of bowhunter wildlife observation volunteers



Over **400**  
eagle nest locations are reported annually by citizens observers

If you're interested in getting involved with one of MDC's many citizen-science opportunities, call **Tom Kulowiec** at 573-815-7902, ext. 2894. He can direct you to projects in need of your specific interests and skills.

PAINTBRUSH PRAIRIE CA VOLUNTEERS: DAVID STONNER; NEWBURG VOLUNTEERS, MUSSEL SURVEYOR: EAGLE NEST: NOPPADOL PAOTHOONG



# In Brief

News and updates from MDC



The main asphalt road that circles Columbia Bottom Conservation Area in north St. Louis is closed until further notice due to the spring flood damage. The levee was both overtopped and breached, shearing apart a large section of road leading up to the area's boat ramp.

## FLOOD RECOVERY

WHILE MOST DAMAGE HAS BEEN FIXED, MDC STAFF ASKS FOR PATIENCE AS REPAIRS CONTINUE

➔ Many areas of Missouri suffered extensive damage from torrential rains and historic flooding this spring, including some MDC trout hatcheries, conservation areas, and river accesses. Trout hatcheries at Maramec Spring Park, Montauk State Park, and Roaring River State Park quickly reopened with plenty of trout for great fishing, thanks to the hard work of MDC staff and volunteers. The hatchery at Bennett Spring State Park was mostly spared.

Columbia Bottom Conservation Area, located in north St. Louis County at the confluence of the Missouri and Mississippi rivers, is now open. The area experienced damage to roads, trails, and a boat ramp. Repairs are ongoing. Some river and stream accesses in southern Missouri also were impaired by flood waters, but most are reopened.

For information about conservation areas or river accesses near you, including areas that are still closed, visit [short.mdc.mo.gov/Zip](https://short.mdc.mo.gov/Zip).

### CELEBRATE SAFELY

MDC reminds everyone to be careful with fireworks, campfires, and other sources of fire during the summer season.

#### Fireworks

Don't light fireworks in any areas where sparks could ignite dry grass, leaves, or other potential fire fuel. Always have an approved fire extinguisher and an available water supply to douse sparks or flames. Wet the area around where fireworks are being discharged. Check with local ordinances and authorities for bans on fireworks and open burning.

#### Outdoor Burning

Don't burn during unsuitable conditions. Dry grass, high temperatures, low humidity, and wind make fire nearly impossible to control. Check with local fire departments regarding burn bans. A person who starts a fire for any reason is responsible for any damage it may cause.

#### Driving Off-Road

Wildfires can start when dry fuel, such as grass, comes in contact with catalytic converters. Think twice before driving into and across a grassy field. Never park over tall, dry grass or piles of leaves that can touch the underside of a vehicle. When driving vehicles off road, regularly inspect the undercarriage to ensure fuel and brake lines are intact and no oil leaks are apparent. Always carry an approved fire extinguisher on vehicles used off road. Check for the presence of spark arresters on ATV exhausts.

#### Making a Campfire

Clear a generous zone around fire rings. Store unused firewood a good distance from a campfire. Never use gasoline, kerosene, or other flammable liquid to start a fire. Keep campfires small and controllable. Keep fire-extinguishing materials, such as a rake, shovel, and bucket of water, close. Extinguish campfires each night and before leaving camp, even if it's just for a few moments.

#### Call for Help

Call 911 at the first sign of a fire getting out of control.

#### Report Forest Arson

Wildfires are sometimes set by vandals. Help stop arson by calling 800-392-1111 and reporting any potential arson activities. Callers will remain anonymous and rewards are possible.

#### Managed Fire

Fire used in the wrong way can create disasters. Used in the right way, fire can help create habitat for wildlife. For more information on using prescribed fire as a land-management tool, visit [short.mdc.mo.gov/Zo9](http://short.mdc.mo.gov/Zo9).



#### Got a Question for Ask MDC?

Send it to [AskMDC@mdc.mo.gov](mailto:AskMDC@mdc.mo.gov)  
or call 573-522-4115, ext. 3848

#### Q: When do baby woodchucks venture from their dens?

➔ By midsummer, woodchuck young typically are 20 inches long and weigh about 4 pounds. Commonly called groundhogs, these mammals leave their homes about this time, and after digging temporary burrows near their nursery, often move some distance away to establish homes of their own.

The young are playful and often wrestle. Babies are usually entirely under their mother's care, although some males help as the family ventures out of the burrow.

With their thick skin and fur and layers of fat, these mammals are susceptible to high temperatures and solar radiation, so the best time to see groundhogs in July is during the coolest parts of the day.

Although they spend most of their time on or under the ground, woodchucks can climb trees. So be sure to look up, especially around elms,



Woodchucks

since this tree's leaves are a favorite food source.

#### Q: Why do American goldfinches nest so late in the season?

➔ According to The Cornell Lab of Ornithology, American goldfinches wait to nest until June or July when milkweed and thistle have produced seeds, which the birds then feed to their young. Strict vegetarians, goldfinches survive almost entirely on a vegetable diet, swallowing the occasional insect inadvertently.

Goldfinches build their cup-shaped nests in the fork of a shrub or tree, using downy plant fibers and spider webs as glue-like binding. The nests are often woven so tightly they can hold water.

Sunflower and nyjer seeds will attract these birds to your yard. However, they are



American goldfinch





Mayapple

prone to house finch eye disease, a form of conjunctivitis (pink eye). To help prevent the spread of this disease, clean feeders thoroughly every two weeks with hot, soapy water and allow them to dry completely.

#### Q: What are these?

➔ In early spring, mayapples (*Podophyllum peltatum*) come up from the forest floor, forming a colony of umbrella-like plants with one to two leaves. The double-leaf plants also produce a solitary flower and the mayapple,

a pale green-to-yellow fruit that ripens in July.

Edible and sweet, these berries – sometimes called wild lemons – were an important food source for Native Americans. Food enthusiasts pick them to be eaten raw or prepared into beverages, jellies, and preserves. Please note that the mayapple's roots and leaves are poisonous.

Common throughout Missouri, mayapples like damp upland and bottomland forests and the ledges of bluffs. They also can be found in pastures and along roadsides.

## AGENT ADVICE

from

**David Harms**

BENTON COUNTY  
CONSERVATION AGENT

During the dog days of summer, anglers head to the water for the catch of the day. One popular game fish this time of year is catfish. Missouri is home to three varieties of catfish — the blue, flathead, and channel. Catfish can be pursued and taken by pole and line, trotline, throwline, limb line, bank line, and jug line. When using a trotline, it must be checked once every 24 hours or removed completely. In addition, the line must be marked with your name and address or conservation identification number on durable material. I suggest using a copper tag, available where trapping supplies are sold. Also, be mindful of the heat. If the line is too low in the water, there won't be sufficient oxygen for the fish or the bait. The line will have to be adjusted accordingly. For more information, visit the *Wildlife Code of Missouri* or **huntfish.mdc.mo.gov/fishing/species/catfish**.



## What IS it?

Can you guess this month's natural wonder?

The answer is on Page 9.





# I AM CONSERVATION

Issac Breuer

Issac Breuer manages the University of Missouri's A.L. Gustin Golf Course in Columbia, the nation's first college golf course to earn Audubon International's Cooperative Sanctuary Program certification.

➔ In 1996, Breuer questioned why his team mowed the course's out-of-play areas. "I thought, we can benefit the environment, and we wouldn't have to do expensive maintenance." He soon got help turning out-of-play areas into wildlife habitat.

## He provides for pollinators

Working with MDC staff, Breuer began restoring native plants. For the last six years, he's been planting wildflowers for butterflies and bees. "We've had two youth pollinator planting days where hundreds of kids scatter milkweed seed and ID wildflowers," Breuer said. His supervisor, Jim Knoesel, allows him to manage the course like his own farm. "I really appreciate that, and the golfers enjoy the wildflowers, too."

## In his own words

"You don't have to be an expert to do this. MDC and Prairie Foundation's Grow Native! – there's just so much great support out there. You can plant milkweed and have monarch caterpillars to watch in your own front flowerbed."



by Noppadol Paothong





## CONGRATS SARCOXIE HIGH SCHOOL

Sarcoxie High School's archery team was crowned national champions at the National Archery in the Schools (NASP) tournament in May in Louisville. Sarcoxie set the record for highest NASP tournament team score with 3,465 out of 3,600 points. It is also the smallest school to have ever won the national championship. More than 14,490 student archers in grades 4-12 from 670 schools competed, including 857 Missouri students from 45 schools.

Is your school involved in Missouri National Archery in the Schools Program (MoNASP)? It helps participating students – regardless of age, size, or physical ability – be more successful in and out of the classroom. For more information, visit [short.mdc.mo.gov/ZiG](http://short.mdc.mo.gov/ZiG).



## MANAGED HUNTS

Beginning July 1, MDC will accept applications for managed deer hunts. The department offers more than 100 managed deer hunts for archery, crossbow, muzzleloading, and modern firearms, including hunts for youth only and for people with disabilities. Hunters are selected by a weighted random drawing. The hunts occur from mid-September through January. For more information, visit [short.mdc.mo.gov/ZkC](http://short.mdc.mo.gov/ZkC).

## What IS it?

### BABY NORTHERN CARDINALS

Northern cardinals (*Cardinalis cardinalis*) nest in thickets, dense shrubs, and undergrowth, laying three to four eggs in a nest built of stems, twigs, bark, grass, and paper, lined with fine grass and hair. Babies grow to be just over 8 inches from bill to tail. There are usually two broods a year, though up to four are possible.

Photograph by Noppadol Paothong







# Celebrating *Missouri's* Natural Legacy

THE MISSOURI NATURAL  
AREAS SYSTEM TURNS 40

By Mike Leahy

Big Spring  
Natural Area in  
southeast Missouri


PHOTOGRAPH BY  
NÓPPADOL PAOTHONG



The Gateway Arch in St. Louis, Union Station in Kansas City, or championship-winning baseball teams are part of what makes Missouri unique. But the Show-Me State's heritage is as deep as the geology, soils, plants, animals, and streams that retain some of the same patterns that have occurred here for thousands of years.

While only covering about 2 percent of the landmass of the continental United States, Missouri ranks 21st in the

nation in the number of native plants and animals that live here. Sixty-seven species of reptiles crawl, slither, swim, and bask in Missouri's varied habitats — three times the number that occur in Montana. More species of native plants are found here than in all of Alaska. Missouri is home to the nation's largest prairie remnants east of Kansas, while the Ozarks contain the largest block of wooded land in the Midwest, providing important breeding habitat for dozens of migratory songbirds.



"When I step into a Missouri Natural Area, something amazing happens. I hear and see things that I don't normally in busy, day-to-day life. Everything else seems to melt away, and I can focus on the here and now.

*It is a magical transformation."*

— Lynne Hooper, Missouri Master Naturalist



Missouri boasts some of the largest freshwater springs in the world, and nearly 17,000 miles of streams and rivers flow through the state. It's little wonder that Missouri ranks ninth in the nation in the number of native fish species that swim our waters. More than 7,000 caves riddle the rocky uplands of the Ozarks, providing habitat for many unusual creatures. A number of species, such as the Caney Mountain cave crayfish and the bluesripe darter, are found only in Missouri.

### Forging a Legacy

In 1977, a group of forward-thinking biologists working for MDC and the Missouri Department of Natural Resources (DNR) came together to identify and preserve the last and best examples of the state's prairies, forests, woodlands, savannas, glades, wetlands, and caves to be "permanently protected or managed for the purpose of preserving their natural qualities." They laid the groundwork for what today has become the Missouri Natural Areas System. This system, made up of 188 special areas totaling 87,222 acres of land and water, are key pieces of Missouri's natural heritage. Places like Ava Glades, Blue Spring, Diamond Grove Prairie, Jacks Fork, Mingo, St. Francois Mountains, and Stegall Mountain natural areas exemplify Missouri's unique natural heritage. Today, natural areas are recognized by a partnership,

the Missouri Natural Areas Committee, consisting of its original members — MDC and DNR — along with the Mark Twain National Forest, U.S. Fish and Wildlife Service, Ozark National Scenic Riverways, and The Nature Conservancy.

### Keeping All the Pieces

Conservationist Aldo Leopold wrote, "To keep every cog and wheel is the first precaution of intelligent tinkering." Leopold meant keeping all the native species of our varied habitats. Habitat conservation is the key to protecting rare species and keeping common species common. Natural areas make up just one-fifth of a percent of Missouri's landmass, and yet they account for a large share of the state's natural heritage resources, ranging from alligator snapping turtles to rare orchids. Today, populations of 433 Missouri species of conservation concern occur on designated natural areas, or 38 percent of all known occurrences of Missouri's rare or declining species.

Natural areas conserve high-quality natural communities — groupings of native plants and animals and their associated soils, topography, and geology — ranging from deep soil prairies to rocky glades and murky swamps. Natural communities are complex, with hundreds of native plant and animal species. For example, 320-acre Golden Prairie Natural Area, owned by the



Habitat conservation is the key to protecting rare species and keeping common species common.

Eastern collared lizard

### How Do I Find a Missouri Natural Area?

To plan your visit or to learn more about natural areas, visit [short.mdc.mo.gov/ZwX](https://short.mdc.mo.gov/ZwX). In addition, *Discover Missouri Natural Areas: A Guide to 50 Great Places*, available at [mdcnatureshop.com](https://mdcnatureshop.com), brings to life the outstanding geological, biological, and ecological features of each natural area. Easy-to-use maps and stunning photographs complement the text.

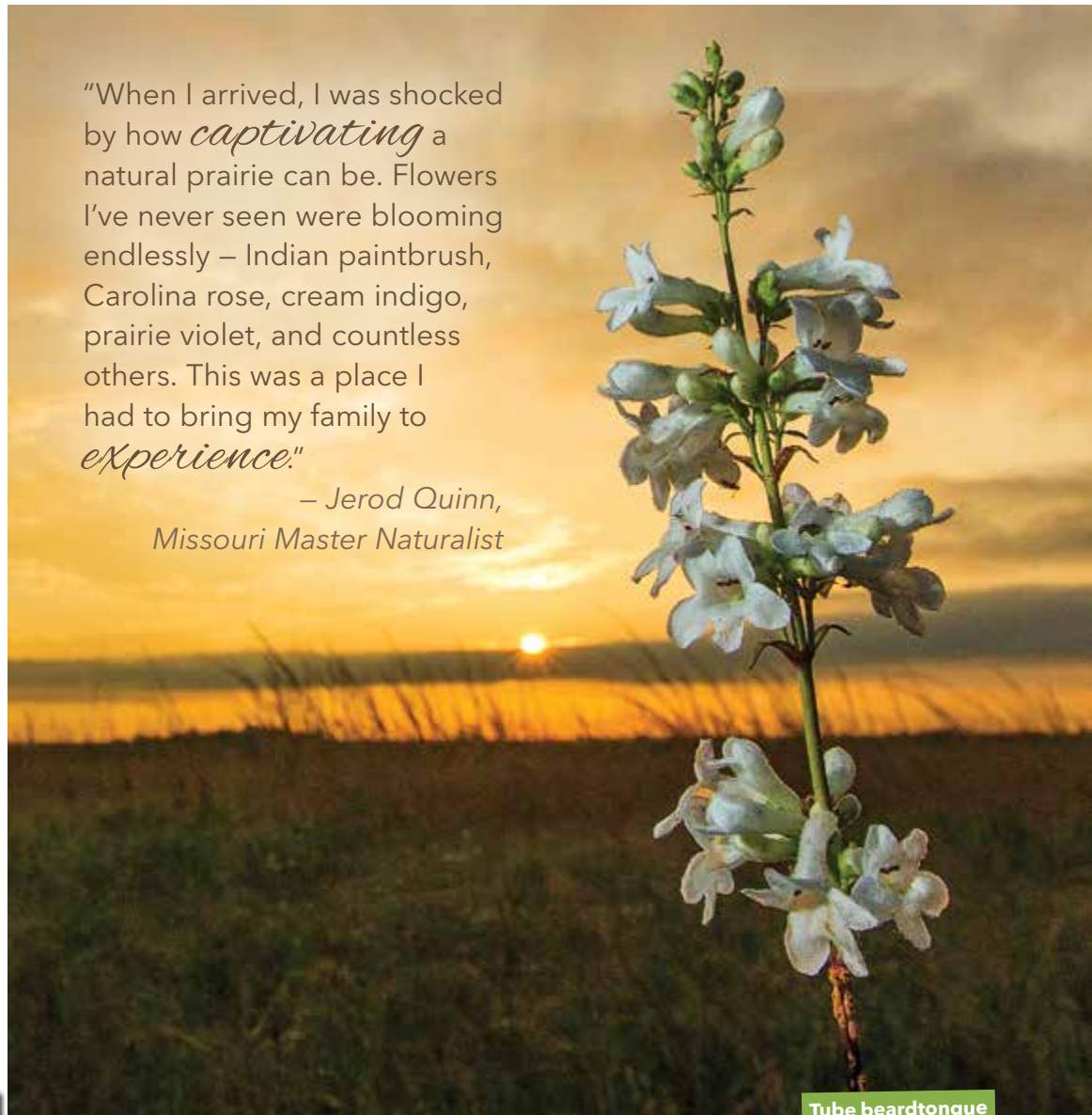




Mint Spring Seep Natural Area

"When I arrived, I was shocked by how *captivating* a natural prairie can be. Flowers I've never seen were blooming endlessly – Indian paintbrush, Carolina rose, cream indigo, prairie violet, and countless others. This was a place I had to bring my family to *experience*."

– Jerod Quinn,  
Missouri Master Naturalist



Tube beardtongue

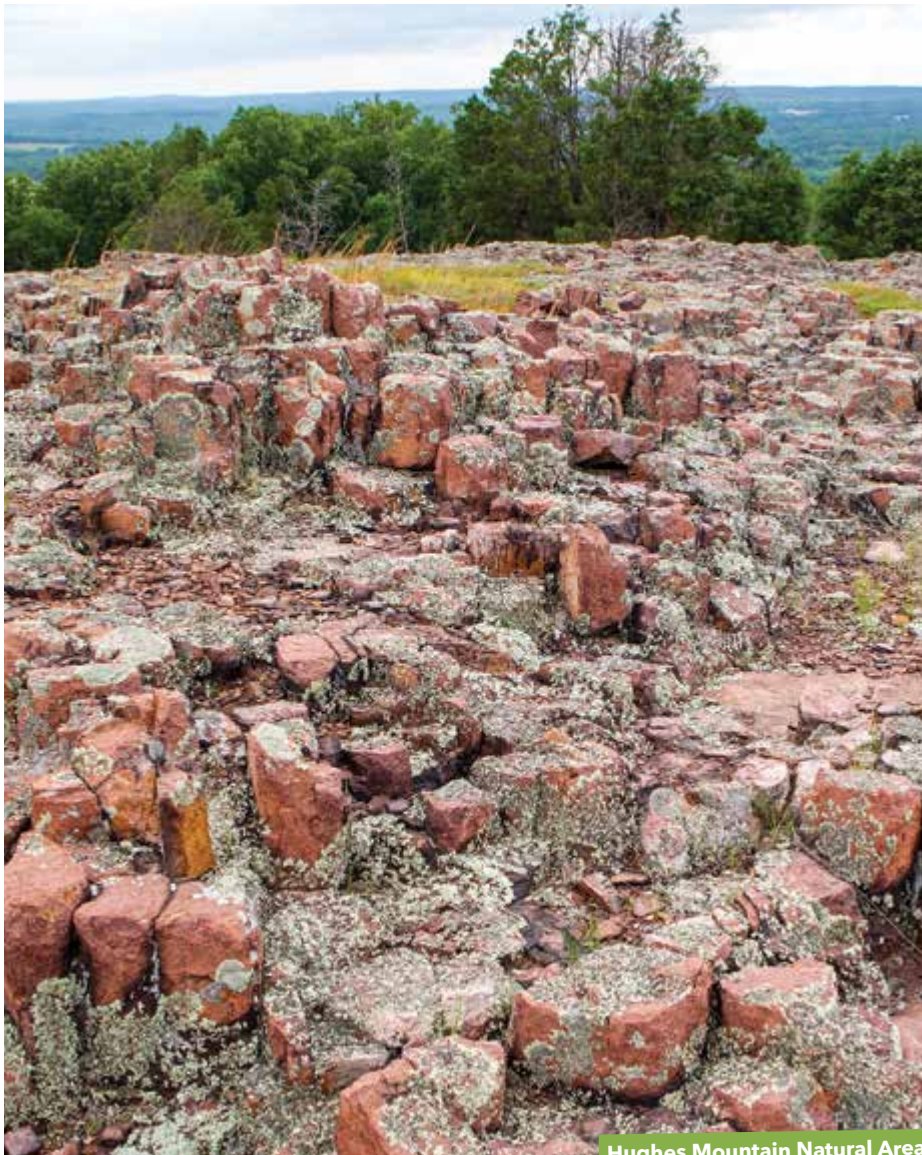


Shooting star



Pale purple coneflower





Hughes Mountain Natural Area



and seed sources for natural community restoration and reconstruction efforts on degraded lands.

Natural areas are a key piece of a wider portfolio that help keep Missouri's native plant and animal species populations healthy. Missouri Natural Areas Committee agencies cannot conserve all species or habitats within natural areas alone. The effort requires a broad partnership of public and private land on natural areas, working farms, and sustainably managed forests to conserve our natural heritage.

## Stewardship of Missouri Natural Areas

Natural areas are not wilderness areas. Many natural areas require some form of active management due to the disruption of natural disturbances like fire or flooding and the introduction of nonnative invasive species such as bush honeysuckle. Lack of hands-on management can mean the loss of native biodiversity. Prescribed fire, thinning, exotic species control, and restoring water flow are all tools used to restore and maintain an area's ecological integrity.

NIANGUA DARTER, MONARCH CATERPILLAR: JIM RATHER

Missouri Prairie Foundation, contains over 300 different native plant species. At the Little Niangua River Natural Area, fisheries biologists have found nine darter species, including two — the Niangua and the Missouri saddled darter

— that are only found in Missouri. Our natural communities contain many examples of intricate ecological relationships, many of which still remain to be discovered. As an example, the seeds of many of our common springtime forest wildflowers, such as Dutchman's breeches and bloodroot, are dispersed by ants.

Natural areas conserve many native species that are not endangered but are uncommon due to habitat loss. By providing habitat, natural areas keep species off the endangered list. These areas are also important reservoirs of native pollinator species, including native bees and butterflies. They are valuable reference sites for scientific studies



Niangua darter





Stegall Mountain Natural Area

## Natural Areas are Yours to Explore

Natural areas belong to Missourians. There are 85,336 acres of natural areas open to public access. All of these places provide opportunities for hiking, birding, nature photography, learning about natural history, or just enjoying the scenery. Nearly all are open to fishing if they have a stream, and 60 percent of natural areas are open to some form of hunting. There are 105 miles of hiking trails and 23 miles of multi-use trails — biking, hiking, and horseback riding — including 16 miles of the Ozark Trail. There are also 56 miles of floatable streams that border or bisect a natural area. Regardless of your outdoor pursuit, you are likely to find a rewarding experience on a Missouri natural area. ▲

*Mike Leahy is the natural areas coordinator for the Missouri Department of Conservation. He enjoys hiking, fishing, and all sorts of nature-study activities with his family.*



Sedge wren atop prairie blazing star

## Why is NATIVE PLANT Conservation Important?

Missouri natural areas are typically rich in native plant species, many of which are no longer common in the modern landscape. Conservation of native plant species may not seem important at first, but consider these facts:

- Over one-fourth of all prescription drugs today have plant origins. Taxol, which is used to treat ovarian cancer, was discovered in the bark of the Pacific yew, a native tree species that grows in the Pacific Northwest and was once considered a “trash tree.” Aspirin was first discovered from a chemical found in willow trees. Certain plants have yielded substances used in drugs to treat heart disease, cancer, and a variety of other illnesses. So far, scientists have investigated only a small fraction of the world’s species and have just begun to unravel their chemical secrets to find possible human health benefits.
- Native plants are the ecological basis upon which life depends, including birds and other wildlife. For example, over 75 percent of the diet of turkey poults is insects, especially grasshoppers and crickets. Research has shown the density of these insects to be much greater in remnant and restored woodlands and glades that have an abundant and diverse ground cover of native plants. Native songbirds also depend on healthy native plant populations. Research by entomologist Doug Tallamy has shown that native oak trees support over 500 species of caterpillars, whereas ginkgo, a commonly planted landscape tree from Asia, hosts only five species of caterpillars. Native songbirds often depend on abundant caterpillar populations, and many rely on them to feed their young. Tallamy found that over 6,000 caterpillars were fed to raise one brood of chickadees.
- Certain native plant species are critically important for the life cycle of some insects, including species of conservation concern. The regal fritillary depends on native violet species, especially prairie and arrowhead violet, during its caterpillar stage. Other examples include the zebra swallowtail whose caterpillars feed on paw paw and the iconic monarch butterfly whose caterpillars depend on milkweeds.
- Pollinators such as native bees pollinate 75 percent of all plants that produce food for human consumption. Native plants provide nectar for pollinators including hummingbirds, native bees, butterflies, and moths. They provide protective shelter for many mammals. The native nuts, seeds, and fruits produced by these plants also offer essential foods for all forms of wildlife.



Monarch caterpillar









# Show-Me **Prairie** and **Grassland** Conservation

PARTNERSHIPS HELP RESTORE  
MISSOURI'S OPEN LANDSCAPES FOR  
WILDLIFE AND PEOPLE

**By Bonnie Chasteen**

When European fur traders first beheld America's open grassland, they called it *prairie*, a French word that roughly means "meadow." Accustomed to Old World pastures of grazing livestock, the traders likely saw America's native grasslands as large, wild meadows full of bison, elk, and pronghorn.

Diamond Grove Prairie  
Conservation Area in  
Newton County

PHOTOGRAPH BY  
NOPPADOL PAOTHONG



## More Than a Meadow

But prairie, we know, is more than a meadow. It's a richly diverse type of landscape that dominated most of North America for 7 million years. Ecologists classify prairie by soil type and rainfall. North America's three broad categories of prairie are tallgrass, mixed grass, and shortgrass. They originally stretched from Canada to Texas and from central Montana to Ohio. Before settlement, about one-third of Missouri's landscape was tallgrass prairie, including savanna, a type of grassland that features widely spaced trees. Today, less than one half of 1 percent of Missouri's original prairie remains. Still, wildlife and people depend on it for so much.

The iconic prairie-chicken and the regal fritillary butterfly can't exist without it. Today's livestock growers benefit from the superior summer forage and hay that native grasses produce. Many families take pride in their land's historic prairie, and outdoor enthusiasts treasure Missouri's native grasslands for their excellent hunting, bird-watching,

and wildflower viewing. Everyone has different reasons for appreciating our state's grasslands, but everyone who loves them agrees: They need our help.

Across the state and beyond, government agencies, nonprofit advocates, farmers, and families are working together to conserve and restore Missouri's historic open landscapes.

## Naturally Diverse Right Down to the Roots

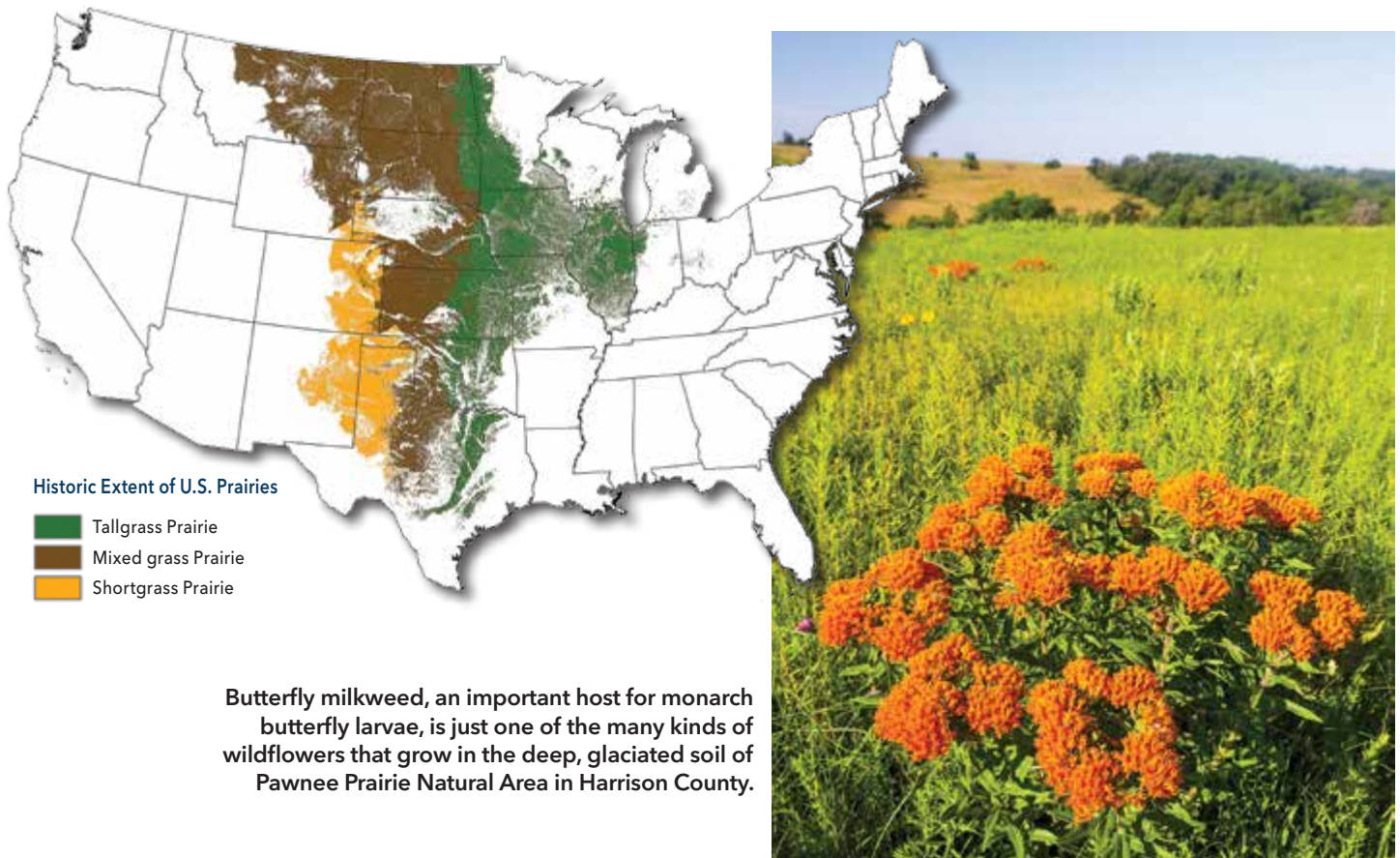
With mostly deep soils and plenty of rainfall, tallgrass prairie is astonishingly diverse. In fact, Missouri's tallgrass prairie is a collection of unique grassland subtypes, each with its own local mix of soils, water regimes, and plants and animals. The Show-Me State's tallgrass prairie communities include loess hills prairie, glaciated prairie, unglaciated prairie, sand prairie, savanna, and wet prairie. Given this diversity of grassland subtypes, it's no surprise that tallgrass prairie supports hundreds of kinds of grasses, wildflowers, shrubs, and trees.

The benefits of this rich plant diversity extend below the ground, too. Prairie grasses and wildflowers are famous for their deep root systems, some as long as 15 feet. These do an exceptional job of absorbing water and conserving soil. They also feed an underground community of fungi, nematodes, and hosts of tiny insects that recycle nutrients and improve soil structure.

## Grasslands Provide Essential Habitat

Following nearly 200 years of conversion to farms, towns, and industries, today's isolated prairie and savanna remnants are scattered among millions of acres of farm fields, towns, and cities. These fragmented landscapes provide the last suitable habitat for many grassland-dependent species like the prairie mole cricket, Franklin's ground squirrel, and the northern crawfish frog.

Fortunately, Missouri's prairies and savannas are getting help from people like Charles and Rose Ann Scherer who own a remnant of sand prairie in Scott County.





# Habitat HEROES



Natural History Biologist Bruce Henry visits with Charles Scherer about his remnant sand prairie acres in Scott County.

**You can't see the Scherers' sand prairie from the main road. But down their lane, a swath of white-tufted splitbeard bluestem sweeps into view.**

"This is really more of a sand savanna, but it is part of a larger, historic sand prairie matrix," said Bruce Henry, MDC natural history biologist. He and Private Land Conservationist Brad Pobst help manage the Scherers' remnant sand prairie acres.

The swath of native prairie flows into an open stand of gnarled oaks and scattered thickets of plum, sumac, and cactus.

"My dad bought the first 80 acres in 1941," Charles Scherer said. "He was conservation-minded. The land was run-down after the Depression in the 1930s and had sand dunes all over. Dad bought it for less than \$5 an acre."

In 1962, Scherer bought another 80 acres of adjoining sand prairie, bringing the total to 160 acres.

The oldest of 11 children, Scherer and Rose Ann also have 11 children. They often host big family gatherings at their place where their children and 27 grandchildren come to camp, enjoy each other's company, and explore their sand savanna.

"We love nature," Scherer said.

He has built several trails on the land and notes that they often see deer, turkey, and quail.

"I think about my dad all the time," Scherer said. "I wouldn't have this place without him."

Thanks to Charles and Rose Ann, their family will have this historic remnant of sand savanna to enjoy for generations to come. Their dedication to conservation also benefits the state as a whole.

"Since the vast majority of the lands in Missouri are held in private ownership, working with great landowners like Charlie is the key to broad-scale conservation success," said Henry. "MDC staff have the expertise to maximize conservation efforts on a given property, but without the interest of willing landowners like the Scherers, these efforts would go unrealized."

On the Scherer property and across the two-county Sand Ridge Conservation Opportunity Area, the focus is habitat management and natural community restoration. Annual prescribed fire and invasive species control are basic practices that provide a diversity of native plants and habitat for both game and nongame wildlife. In addition to habitat management, Henry has set up traps to study the various species of reptiles and amphibians that call these sands home. Regional staff complete surveys for the rare Illinois chorus frog every 10 years.

## Do You Have a Grassland?

The Scherer family's sand prairie is an excellent example of landowners teaming up with MDC staff to conserve and restore grassland natural communities. If you have a grassland, prairie, or savanna, give your regional office a call. Your county's private land conservationist can help you develop a long-term management plan and find funding to help offset the costs. Find regional office phone numbers on Page 2.

## Conserving Grassland Ecosystems Statewide

In Missouri, private and public partners are working to sustain and restore open landscapes where we can do the most good for grassland habitats. MDC calls these places conservation opportunity areas (COA) and priority geographies (PG) because they have remnants of high-quality native grassland, prairie, or savanna. In general, partners use a combination of prescribed fire, mechanical clearing, and herbicides to help maintain the landscape's open character. Technical assistance and cost-share funds help adjoining landowners add value to conservation networks. Public-land managers use prescribed fire and grazing, hold workshops, and host field days to connect the public to the prairies. Ongoing monitoring projects evaluate past management and shape future actions.

## Loess Hills Prairie

A German word, "loess" means "loose," which describes the texture of these prairies' deep, wind-deposited glacial soils. Less than 200 acres of this remnant prairie plant community remain in Missouri.

The Loess Hills Complex includes lands managed by MDC and the U.S. Fish and Wildlife Service as well as land owned by The Nature Conservancy (TNC). The prairies are managed to preserve unique species like the rare silverleaf scurf-pea, downy painted cup, soapweed, low milk vetch, and the swift tiger beetle.

## Glaciated Prairie

Missouri's highly fertile, deep-soil glacial till prairies occur primarily in



At Prairie Fork Conservation Area in Callaway County, researchers and managers are restoring the area's prairies, savannas, woodlands, forests, wetlands, and streams.



the Central Dissected Till Plains north of the Missouri River. Here, the Grand River Grasslands PG supports several species of conservation concern, including northern prairie skinks, regal fritillary butterflies, and Topeka shiners. Many important grassland birds, including one of the last remaining populations of greater prairie-chickens in Missouri, Henslow's sparrows, dickcissels, and northern harriers breed within this landscape and benefit from prairie restoration projects at Dunn Ranch and Pawnee Prairie Natural Area.

## Unglaciatiated Prairie

These prairies have soils that are generally shallower, often showing exposed bedrock.

The Upper Osage Grasslands PG encompasses both Taberville Prairie Conservation Area and Wah'Kon-Tah Prairie, totaling 3,300 acres of native tallgrass prairie, currently owned by MDC and TNC. Nearby, privately owned remnant prairies add value to the existing conservation network, and other grasslands and cropland hold significant restoration potential.

## Sand Prairie

Historically in Missouri, sand prairies likely occurred on deep sand deposits along the Mississippi River, especially in northeast and southeast parts of the state. Of the estimated original 60,000 acres of sand prairie in southeast Missouri, less than 2,000 acres remain, and they all

have been altered by agriculture. Rare species include snoutbean, sand hickory, Hall's bulrush, jointweed, dusty hog-nosed snake, Illinois chorus frog, eastern spadefoot toad, and northern harrier, as well as many native bees, sand cicadas, and other insects that we have just begun to learn about.

## Savanna

Because savannas are a blend of grassland and woodland habitat types, their plants and animals tend to be those like white-tailed deer and wild turkey that are able to use both grassland and woodland characteristics.

The Missouri-Iowa Woodland/Savanna Geography includes portions of five Missouri counties and continues into Iowa. Additionally, this geography encompasses both Spring Creek Watershed PG and Thousand Hills COA.

Conservation efforts have benefited savanna species like rough blazing star, showy goldenrod, and New Jersey tea.

## Wet Prairie

A dense cover of perennial grasses mixed with wildflowers and sedges signals this type of prairie that typically occurs on river floodplains and occasionally in upland prairie depressions or swales.

Wet prairies support a variety of wildlife, such as American bitterns, yellow rails, sedge wrens, meadow voles, Plains leopard frogs, and many species of snakes, including the state-endangered prairie massasauga rattlesnake.

In the Four Rivers Wetland and Wet Prairie Complex COA in Vernon and Bates counties, area managers are seeing the recovery of native grasses and wildflowers from an existing, viable seed bank within the areas' soils. ▲

*Bonnie Chasteen is Missouri Conservationist's associate editor. She's handy with a drip torch and enjoys helping her friends conduct prescribed burns on their prairies and woodlands.*

## Special Thanks

Last August, the *Conservationist* launched a six-part exploration of Missouri's natural communities and efforts to conserve them. We started with karst habitat and continued through forests, wetlands, rivers and streams, and glades. This month, we end with grasslands and prairies. Throughout the series, natural history information came from the *Missouri State Wildlife Action Plan*. This document provides a habitat-management roadmap for MDC staff and partners. The *Plan's* basic terrestrial natural community classifications and descriptions are generalizations from those Paul W. Nelson described in *The Terrestrial Natural Communities of Missouri* in 2010. The aquatic natural community classifications and descriptions are adopted primarily from *The Fishes of Missouri*, authored by William L. Pflieger in 1997. Thanks to the many partners and staff who informed the *Plan* and this series.

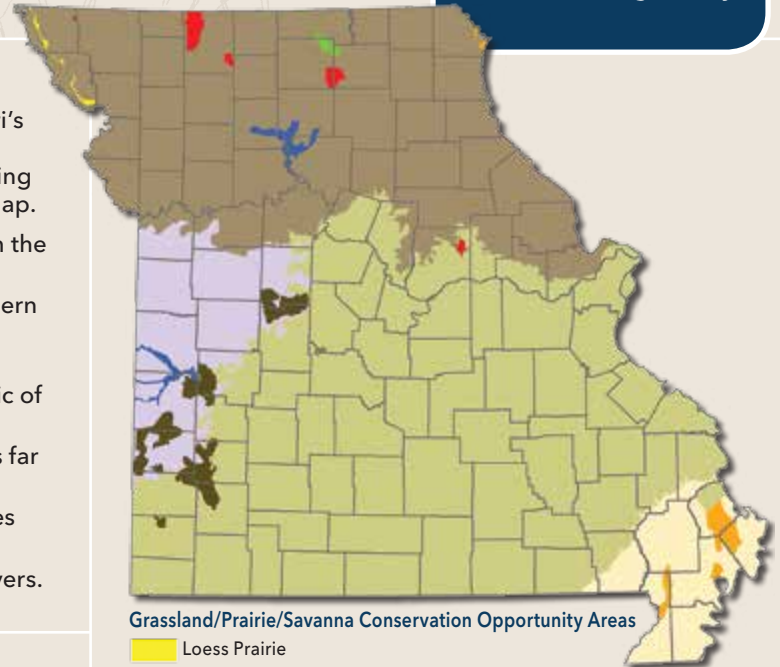


# Grassland, Prairie, and Savanna

**Learn More**  
Dig into the details about Missouri's grasslands, prairies, and savannas at [short.mdc.mo.gov/Zwj](http://short.mdc.mo.gov/Zwj).

Before settlement, approximately 15 million acres of prairie and 6 million acres of savanna covered one-third of Missouri's landscape. Today, only fragments of our state's six original grassland subtypes remain. MDC and its partners are focusing grassland conservation efforts on locations shown on the map.

- Deep-soiled **loess hill prairies** parallel the Missouri river in the far northwestern portion of the state.
- **Glaciated prairies**, though once common across the northern third of the state, today are only interspersed in northern Missouri.
- Drier, shallow-soiled **unglaciated prairies** are characteristic of the Osage Plains region.
- Small remnants of **sand prairies** can be found in Missouri's far southeastern Bootheel and along the Mississippi River.
- Just a handful of **savanna** landscapes remain where prairies transition into woodland.
- **Wet prairies** can still be found along a few of Missouri's rivers.



Grassland/Prairie/Savanna Conservation Opportunity Areas

- Loess Prairie
- Glaciated Tallgrass Prairie
- Unglaciated Tallgrass Prairie
- Sand Prairie
- Savanna
- Wet Prairie

## Ecological Regions

- Central Dissected Till Plains
- Mississippi River Alluvial Basin
- Osage Plains
- Ozark Highlands

## Visit Missouri's Public Prairies

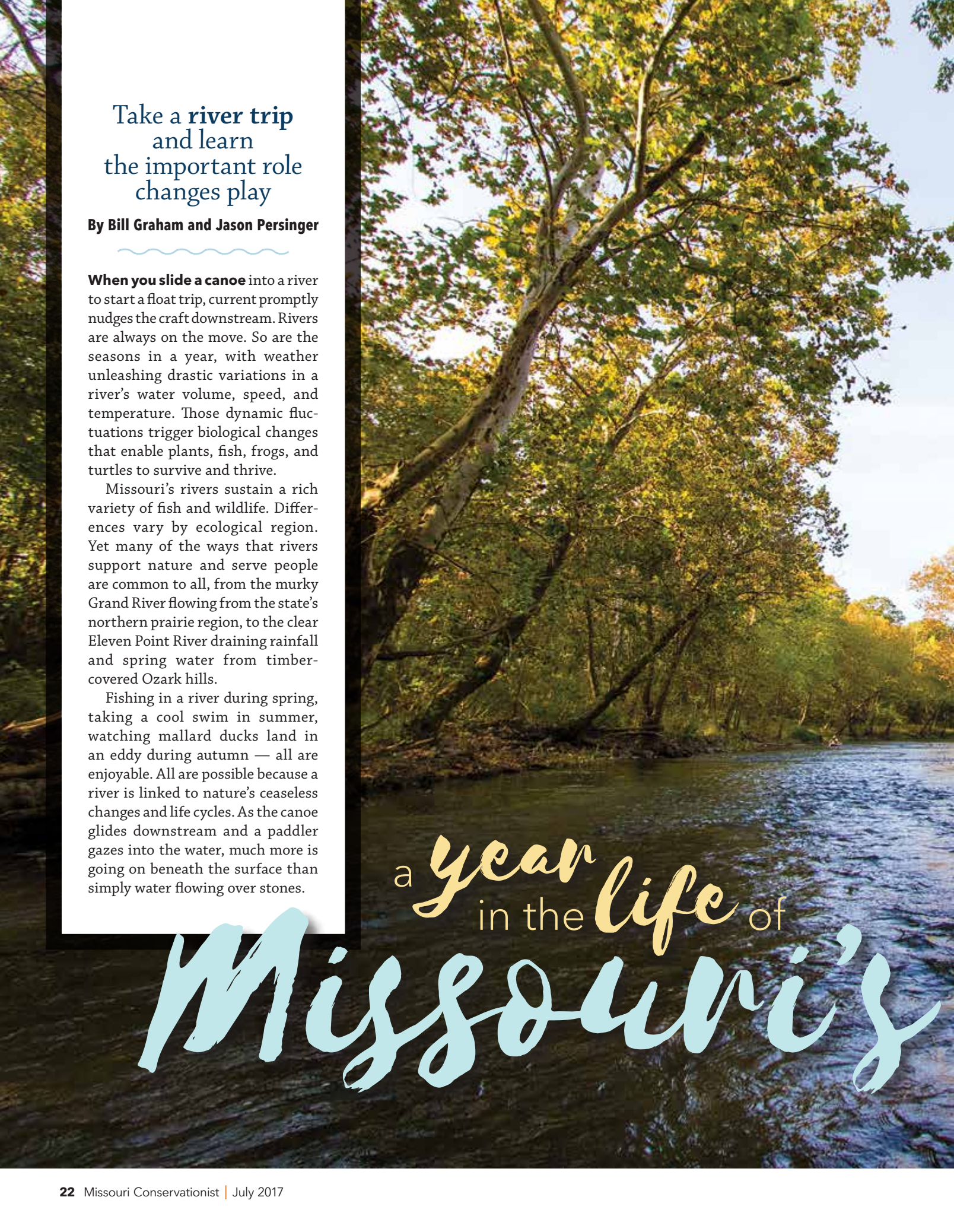
It's hard to appreciate the beauty and diversity of Missouri's native grasslands unless you've experienced them. Missouri has several public prairies you can visit and explore. To browse prairies in Missouri's natural areas system, visit [short.mdc.mo.gov/ZwX](http://short.mdc.mo.gov/ZwX).

## Plants and Animals of Greatest Conservation Need

WESTERN FOXSNAKE: NOPPADOL PAOTHONG; ILLINOIS CHORUS FROG: TOM JOHNSON; BOBOLINK, PLAINS BOX TURTLE, FRANKLIN'S GROUND SQUIRREL: JIM RATHER; DOWNY GENTIAN: SUSAN FARRINGTON







## Take a river trip and learn the important role changes play

By Bill Graham and Jason Persinger

When you slide a canoe into a river to start a float trip, current promptly nudges the craft downstream. Rivers are always on the move. So are the seasons in a year, with weather unleashing drastic variations in a river's water volume, speed, and temperature. Those dynamic fluctuations trigger biological changes that enable plants, fish, frogs, and turtles to survive and thrive.

Missouri's rivers sustain a rich variety of fish and wildlife. Differences vary by ecological region. Yet many of the ways that rivers support nature and serve people are common to all, from the murky Grand River flowing from the state's northern prairie region, to the clear Eleven Point River draining rainfall and spring water from timber-covered Ozark hills.

Fishing in a river during spring, taking a cool swim in summer, watching mallard ducks land in an eddy during autumn — all are enjoyable. All are possible because a river is linked to nature's ceaseless changes and life cycles. As the canoe glides downstream and a paddler gazes into the water, much more is going on beneath the surface than simply water flowing over stones.

a year  
in the life of  
*Missouri's*





# Rivers

A canoeist makes  
his way down the  
Gasconade River.

PHOTOGRAPH BY  
NOPPADOL PAOTHONG



# Spring

## Renewal

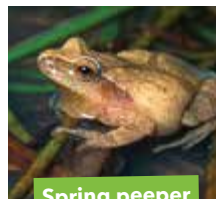
Rivers produce a soothing, gurgling melody as water flows over riffles and around logs. It's a song that paddlers and anglers know well. Rains control the tune and sometimes change the song into a roar. Water levels go up and down during springtime, and along with warmth from the sun, trigger changes that renew life in a river system.

Spring floods reconnect a river with its floodplain. Prairie streams like the Grand River may overflow to side channels and wetlands, providing quiet-water spawning sites for fish, egg-laying places for amphibians, and feeding places for ducks and geese winging northward toward summer breeding grounds.

Rivers draining northern prairie and woodland regions, like the Grand, hold various fish year-round and are favored spots for anglers seeking channel and flathead catfish. But during a spring rise in water flow and warmer water temperatures, additional fish from the Missouri River will move into these streams looking for places to spawn, sometimes traveling many miles upstream. Male catfish will lure females into holes in the bank, hollow logs, or crevices under rocks. Then the males will fiercely guard the fertile eggs.

Large fish swimming in the Missouri, such as paddlefish, shovelnose sturgeon, and lake sturgeon, will also enter the Grand. Murky water and dirt banks conceal the fact that many prairie and woodland streams also have rocky shoals and limestone ledges bordering pools. They serve as spawning and feeding places for other fish, such as sunfish and minnows. Even angler favorites, such as white bass, sometimes make a run out of the Missouri into prairie streams. Blue suckers will move into the Grand River in large numbers to spawn on rocky shoals.

Meanwhile in the Ozark watersheds, heavy spring rains flush sediment from pools. This maintains water depth and cleans gravel beds for fish that depend on them for spawning sites. Early spring



Spring peeper

finds fish, such as walleye, migrating upstream in the Eleven Point and Current rivers to spawn in fast-water over gravel. Anglers know it's a good time to catch big walleye at night in the deeper pools. Canoeists may also see fish like black or golden redbreast suckers gathered at favored spawning riffles.

Peer into the Eleven Point's clear water in spring and you might see circular gravel mounds 1–3 feet in diameter and 6–8 inches high. The hornyhead chub is at work. Males excavate gravel into spawning beds during late April and early May. These 5- to 10-inch fish are known to travel 20 feet to pick up a pebble for their mound. In streams throughout the Ozarks, their handiwork also doubles as spawning beds for minnows, such as bleeding shiners, Ozark minnows, and redbelly dace.

May is a lush month in rivers as well as woodlands. Spring rains keep water flows strong. Largemouth and smallmouth bass fan out gravel nests for spawning. Canoeists may notice circular nests in quiet water near banks, side channels, and shallows, likely made by orangespotted sunfish in northern streams and longear sunfish in the south. Insects, tadpoles, and young crayfish emerge from hiding places.

The wetted side channels and shallows curl around sand bars and snags, providing a place for water willow to grow. Vegetation provides nursery habitat for young fish and a critical food supply for aquatic insects. Northern cricket frogs attach their eggs to the vegetation, too. Spring also brings young beavers and river otters from their lodges and dens. All these things a canoeist may see on a spring day. But like fluffy white cottonwood seed landing on water and floating downstream, all they see will soon change.



Shovelnose sturgeon







Eleven Point River

Families float the Meramec River on a hot summer day.

# Summer

## Sun and Storms

Rivers are havens for people during Missouri's hot, dry summers. Whether it's a scenic float trip down the Eleven Point, fishing for smallmouth bass on the Gasconade, chasing catfish on the Grand River, or just spending the afternoon splashing in a favorite swimming hole, Missourians spend a lot of time using and enjoying our rivers and streams in summer.

Summer finds river flows lower but also steadier, which has specific benefits for fish and wildlife. Many species use changes caused by lower water flows to complete their life cycle. Wetlands slowly drain into the rivers, which allow growth of wetland vegetation that will provide food for ducks, geese, and shorebirds migrating southward in winter. In larger rivers, species like the eastern spiny softshell search for exposed sandbars and gravel bars to lay their eggs.

Many a person wading in a stream on a summer day has pulled up a freshwater mussel, studied the oval shell, and placed it back in the water. They may have interrupted a reproductive liaison. Freshwater mussel species, such as the plain pocketbook, use this time to complete their life cycle.

The plain pocketbook waves a piece of flesh that acts as a lure to attract potential fish hosts for their young. When a potential host fish takes the bait, instead of getting something to eat, they get a face full of microscopic glochidia, larval mussels. Glochidia attach to fish gills, grow and transform, then

in late summer or early autumn they fall off the unharmed fish and begin life as a bottom-dwelling mussel. Completing this cycle during summer's lower, steady river flows helps maximize chances the young mussels will land in a place that will stay wet year-round and survive.

The dry season causes uncertain survival for many species in smaller streams where water flows cease and only pools remain. These isolated pools serve as refuge for aquatic species and critical water supplies for many terrestrial species. Their salvation is that weather, like nature, is always changing.

Thunderstorms send canoeists and anglers scrambling for shelter. But summer storms are a saving grace for small streams. They play a crucial role in maintaining and recharging pools by reducing water temperatures and enhancing water quality, allowing species to survive until the season turns and steady flows return.

Plain pocketbook



Eastern spiny softshell



# Fall

## Returns

Autumn rains bring rivers cooler water temperatures and healthier flows. Scarlet, purple, and golden leaves drop from trees to the water and are carried downstream, unless they pile up on a log jam and provide temporary cover for fish. Anglers enjoy rivers in autumn because the fish are often biting as they store energy for winter. And if the fish are not hungry, the scenery is gorgeous.

When fall rains push rivers out of their banks, wetlands are recharged. Shallow side channels that went bare in summer now fill with water again. Great blue herons and shore birds have more places to stalk small fish or hunt aquatic bugs.

Blue-winged and green-winged teal are the first migrating waterfowl to visit the pools of Missouri's rivers and wetlands. But pelicans, shorebirds, ducks, and geese follow as autumn turns colder and daylight grows shorter.



Great blue herons and other shore birds search for food among the shallow side channels of fall rivers.



Mingo River in southeast Missouri

It may not be obvious to the fall paddler, but fish are on the move, too. Flathead and blue catfish move to deeper pools, perhaps even move out of rivers like the Grand back into deep pools of the Missouri River. In Ozark rivers like the Eleven Point, smallmouth bass move toward winter haunts in the larger springs, taking advantage of steady water temperature.

Autumn's cooler water and shorter days trigger the reproductive season for some river species. Missouri's largest salamander, the hellbender, gathers in deep pools in Ozark streams to breed. Females lay their eggs in cavities under large rocks, and the males remain to defend the eggs until they hatch a month later. Many crayfish, too, such as golden crayfish and Ozark crayfish, breed during fall and the females carry the eggs until the following spring.

Water flowing in a river is always headed for the next bend or riffle, and a stream's creatures are always preparing for the next season.



Hellbender



Golden crayfish



# Winter

## Rest

Winter's return slows biological life in a river but never completely halts growth and changes. Folks in the Ozarks may take advantage of clear water and low flows to gig suckers and hold onshore fish-fry gatherings. Birders hiking near northern rivers watch for migrating eagles fishing in rivers like the Grand. A hard freeze might trap and kill shad, and eagles will feast on them during a thaw.

Many fish, turtles, crayfish, and other aquatic species spend most of the winter in a single deep pool, moving and eating very little. They rely on steady river flows to maintain their winter habitats, whether it's in open water or under a layer of ice.

A prolonged cold snap will freeze the surface of most lakes and wetlands. But moving water keeps rivers at least partially open as resting and feeding habitat for waterfowl that linger late into winter. And no matter the cold, river otter breeding occurs over several

months starting in December. Their pregnancies last about a year, so birth will occur in the cold season.

Missouri winters fade in late February and early March. Spring rains, longer hours of sunlight, and warming water temperatures prompt walleye once again to swim upstream to rocky riffles and spawn. Big-river catfish are on the move. Aquatic insects hatch and minnows eat them. Paddlers spot great blue herons wading in the shallows to eat minnows.

The river's seasonal cycles begin again, change never ending for the life within. ▲

A bald eagle feasts on shad in winter.



River otter



**Bill Graham's** love of the Sac River in boyhood led to a fascination with all rivers for wading, fishing, swimming, and watching, and the MDC media specialist currently lives near the Platte River in Platte County. **Jason Persinger** works as a resource scientist focused on rivers and their habitats. He also spends as much of his free time as he can fishing, floating, and enjoying those same rivers.



# Get Outside

in JULY →

Ways to connect with nature



Ruby-throated hummingbird

# 1

## WHAT'S THE WORD HUMMINGBIRD?

Look for hummingbirds around your feeders and flowers. Whether they're feeding from a nectar feeder or from flowers in your garden, it's hard to find a bird more delightful to watch.

# 2

## BERRY SWEET



Blackberries are ripening by July 1. Go out and find enough to make a pie or eat on top of your favorite ice cream. Summer never tasted so sweet!

# 3

## SOUND OF SUMMER

Listen for the song of the katydids. You may not see them, but you are sure to hear them from their perch high in the treetops. Missouri's nighttime chorus of insect sounds has been likened to a symphony.

If that's the case, then katydids certainly perform some of the loudest solos during our hottest summer nights.



Katydid



KANSAS CITY REGION

# 4

## A Day at the Range

Saturday, July 22 • 12-6 p.m.

Lake City Range

28505 E. Truman Road, Buckner, MO 64016

For more information, call 816-249-3194

Bring your family to the range for a day of free shooting. Improve your skills at trap and/or skeet shooting, get your guns sighted in for the upcoming seasons, or dust off your bow and bring it out to the archery range. If you haven't been to the range for a while, this is a great opportunity to come and join in the fun.

## Natural Events to See This Month

Here's what's going on in the natural world.



Black-eyed Susans bloom



Squirrels bear summer litters



Goldfinches begin nesting as thistles go to seed



# 5

## Watering Wildlife: Concrete Birdbaths

SOUTHEAST REGION

Saturday, July 22 • 1-3 p.m.  
Cape Girardeau Conservation Nature Center  
2289 County Park Drive, Cape Girardeau, MO 63701  
Registration required; call 573-290-5218 by July 21

Refresh your backyard wildlife by making a nature-inspired birdbath to take home. You will discover the many types of inhabitants that will be drawn to your backyard oasis. Adult supervision is required for ages 12-17.

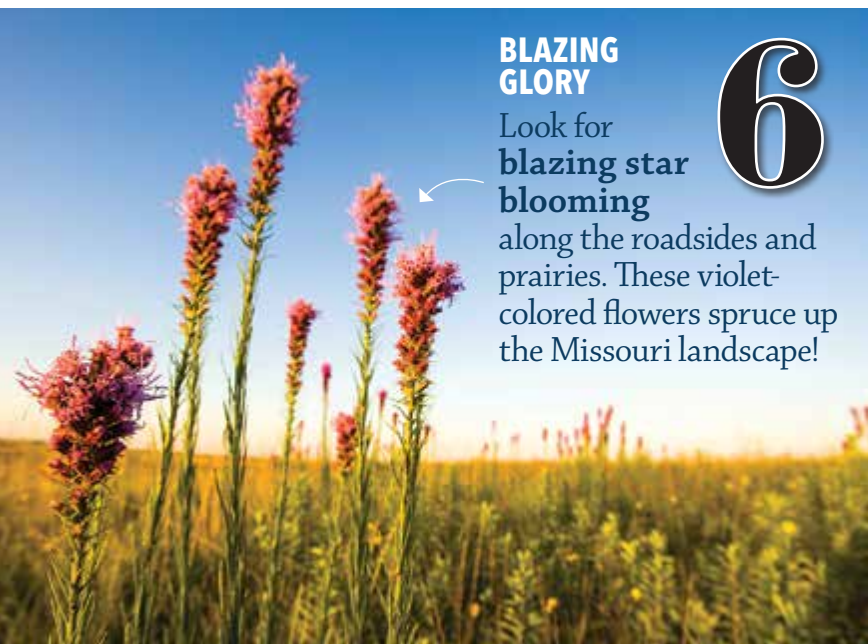


American robin

## BLAZING GLORY

Look for **blazing star** blooming along the roadsides and prairies. These violet-colored flowers spruce up the Missouri landscape!

# 6



Mink kits travel with their mothers along streams



Wild black cherries and plums ripen

# Check out the ROD and REEL LOANER PROGRAM



## Get hooked on fishing

The Rod and Reel Loaner Program lets you check out free fishing poles and tackle boxes. Offered at 90 locations throughout Missouri, the loaner program makes basic fishing accessible to everyone.

Brought to you by the Missouri Department of Conservation.

To find a loaner location near you, visit [short.mdc.mo.gov/ZJq](http://short.mdc.mo.gov/ZJq).





# Places to Go

## SOUTHWEST REGION

### Bushwhacker Lake Conservation Area

Prairie and woodlands combine to offer diverse outdoor opportunities

by Larry Archer

✱ The peacefulness of a morning on the prairie of Bushwhacker Lake Conservation Area belies the violence of the struggle that spawned the area's namesakes.

Named for the Civil War-era Confederate sympathizers who frequently battled both Union troops and pro-Union Jayhawkers from Kansas, this 4,790-acre conservation area's diverse landscape in Vernon County offers visitors an equally diverse selection of outdoor opportunities.

"It's kind of managed two ways," said area manager Nick Burrell. "It's managed for all the native prairies we have, and it's also managed as an Ozark woodland. It's got glades (dry, desert-like areas). It has shelter caves. It has bottomland along Little Dry Wood Creek. It's got a little bit of everything."

For birders, the area's 1,400 acres of prairie offer an array of grassland species, including prairie-chickens. The Audubon Society of Missouri lists as many as 43 species identified at the site.

A popular hunting spot, deer hunting is allowed by managed hunt only. Hunters can apply online this month to be included in the drawing. For more information, see the *Fall Deer & Turkey Hunting Regulations and Information* booklet, available where permits are sold or online at [short.mdc.mo.gov/ZZf](http://short.mdc.mo.gov/ZZf). Additionally, the 157-acre Bushwhacker Lake offers good bass and crappie fishing.



"It's a really good time to walk out in the prairies on the western side of the area. June and July are the two showy times for the prairie plants. So you're going to see tons of native grassland species."

—Bushwhacker Lake Conservation Area Manager Nick Burrell

WHAT  
TO  
LOOK  
FOR  
WHEN  
YOU  
VISIT



Greater prairie-chicken





Bushwacker Lake CA in southwest Missouri has more than 2,000 acres of native prairies, savannas, and grasslands, making it ideal for viewing native flowers and grassland birds.



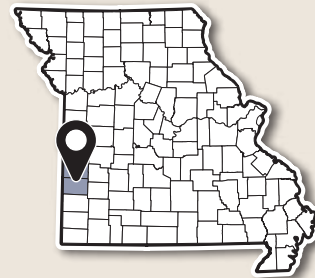
Bobwhite quail



Wild turkey



White-tailed deer



## BUSHWHACKER LAKE CONSERVATION AREA

is located in Vernon and Barton counties. From Brounagh, take Highway 43 south 2.5 miles to Zodiac Road, then east 1 mile to the area.

N 36° 36.384 | W 94°03.505

[short.mdc.mo.gov/Zim](http://short.mdc.mo.gov/Zim) 417-895-6880

### WHAT TO DO WHEN YOU VISIT



**Bird Watching** Good diversity of grassland birds, including dickcissels, grasshopper sparrows, Henslow's sparrows, and short-eared owls. Greater prairie-chickens have booming grounds on the west side of the area.



**Camping** Individual campsites (primitive with a privy available). No other amenities provided.



**Fishing** Bass, catfish, crappie, sunfish



**Hiking** Allowed on the entire area. Many mowed access trails provide quality hiking opportunities.



**Horseback Riding** A 6.6-mile horse/hiking trail is located southeast of the lake. The trail is closed to horseback riding during all deer and turkey hunting seasons.



#### Hunting

**Deer** Good; refer to the *Fall Deer and Turkey* booklet for current regulations.

**Dove** Fair; no fields actively managed for dove hunting, but dove hunting opportunities exist on many fields currently cropped by permittee farmers. Statewide regulations apply.

**Bobwhite quail** Good; management activities include prescribed burning, edge feathering, patch-burn grazing, tree removal, grass/forb planting, and grain crops throughout the area.

**Rabbit** Good

**Squirrel** Good

**Turkey** Good; refer to the *Spring Turkey* or *Fall Deer and Turkey* booklets for current regulations.

**Waterfowl** No managed wetlands; several ponds and larger lakes provide waterfowl habitat and hunting opportunities.



**Nature Viewing** Many portions of native prairie have a good plant diversity.





## Painted Bunting

*Passerina ciris*

### Status

Not abundant anywhere in the state. As summer residents, rare in southwest Missouri, and accidental elsewhere. As migrants, accidental. Internationally, they are ranked as near threatened.

### Size

5½ inches (length)

### Distribution

Southwest Missouri



### Did You Know?

This species is trapped in large numbers in many parts of its range and sold as a cage bird, even though international laws ban the sale of wild-caught birds. Male painted buntings, especially, are targeted, and in Florida the species has declined as a result.

**B**irds as beautiful as this can make birding an addiction! Grab your binoculars and visit the tangles and thickets in southwestern Missouri. It's worth a special trip just to see one. Try looking in the shrubby growth along lakes, just above the high-water mark. Bull Shoals Lake is a good place to start. Also look for them in thickets on glades and in old pastures. Once you find the appropriate habitat, you're sure to see one.



### LIFE CYCLE

A painted bunting can live for at least 12 years. They are found in Missouri May–September, then they migrate to southern Mexico or Central America for the winter. The female builds a cup nest of plant stems, leaves, and other materials, bound together with spider webbing, usually fixing it on a shrub or other fairly low plant.



### FOODS

The basic diet includes seeds, especially grass seeds and seeds of pigweed, spurge, St. John's-worts, docks, roses, and more. Like many other bird species, they eat many more insects during summer breeding season, when the growing young need extra protein.



### ECOSYSTEM CONNECTIONS

Birds that migrate play a role in every region they pass through. This species helps limit insect populations in its breeding territory.



# Outdoor Calendar

❖ MISSOURI DEPARTMENT OF CONSERVATION ❖

## FISHING

### Black Bass

Impounded waters and most streams north of the Missouri River:  
Open all year

Most streams south of the Missouri River:  
May 27, 2017–Feb. 28, 2018

### Bullfrogs, Green Frogs

June 30 at sunset–Oct. 31, 2017

### Nongame Fish Giggling

Impounded Waters, sunrise to sunset:  
Feb. 1–Sept. 14, 2017

Streams and Impounded Waters,  
sunrise to midnight:  
Sept. 15, 2017–Jan. 31, 2018

### Paddlefish

On the Mississippi River:  
Sept. 15–Dec. 15, 2017

### Trout Parks

Catch-and-Keep:  
March 1–Oct. 31, 2017

Catch-and-Release:  
Nov. 10, 2017–Feb. 12, 2018

### Free MO Fishing App

Plan your next fishing trip with MDC's free MO Fishing app. Search for nearby waters and check the availability of fish attractor data, boat ramps, parking lots, and public restrooms for those areas. Get it in Android or iPhone platforms at [short.mdc.mo.gov/ZJZ](http://short.mdc.mo.gov/ZJZ).



### Free MO Hunting App

Use your smartphone to purchase, view, and store annual hunting permits. You can even use it to notch your permit and Telecheck your harvest directly from your permit within the application. Get it in Android or iPhone platforms at [short.mdc.mo.gov/ZoQ](http://short.mdc.mo.gov/ZoQ).

## HUNTING

### Bullfrogs, Green Frogs

June 30 at sunset–Oct. 31, 2017

### Coyote

Restrictions apply during April, spring turkey season, and firearms deer season.

Open all year

### Crow

Nov. 1, 2017–March 3, 2018

### Deer

Archery:  
Sept. 15–Nov. 10, 2017  
Nov. 22, 2017–Jan. 15, 2018

Firearms:

- ▶ Early youth portion (ages 6–15):  
Oct. 28–29, 2017
- ▶ November portion:  
Nov. 11–21, 2017
- ▶ Late Youth Portion (ages 6–15):  
Nov. 24–26, 2017
- ▶ Antlerless Portion (open areas only):  
Dec. 1–3, 2017
- ▶ Alternative Methods Portion:  
Dec. 23, 2017–Jan. 2, 2018

### Dove

Sept. 1–Nov. 29, 2017

### Groundhog (woodchuck)

May 8–Dec. 15, 2017

### Pheasant

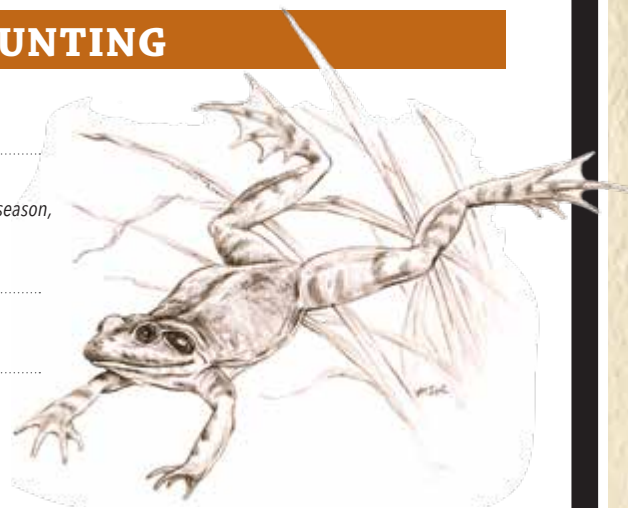
Youth (ages 6–15):  
Oct. 28–Oct. 29, 2017

Regular:  
Nov. 1, 2017–Jan. 15, 2018

### Quail

Youth (ages 6–15):  
Oct. 28–Oct. 29, 2017

Regular:  
Nov. 1, 2017–Jan. 15, 2018



### Rabbit

Oct. 1, 2017–Feb. 15, 2018

### Sora, Virginia Rails

Sept. 1–Nov. 9, 2017

### Squirrel

May 27, 2017–Feb. 15, 2018

### Teal

Sept. 9–24, 2017

### Turkey

Archery:  
Sept. 15–Nov. 10, 2017  
Nov. 22, 2017–Jan. 15, 2018

Firearms:

- ▶ Fall: Oct. 1–31, 2017

### Waterfowl

See the Waterfowl Hunting Digest or visit [short.mdc.mo.gov/ZZx](http://short.mdc.mo.gov/ZZx) for more information.

### Wilson's (Common) Snipe

Sept. 1–Dec. 16, 2017

### Woodcock

Oct. 15–Nov. 28, 2017

For complete information about seasons, limits, methods, and restrictions, consult the *Wildlife Code of Missouri* at [on.mo.gov/2n1Nrow](http://on.mo.gov/2n1Nrow). Current hunting, trapping, and fishing regulation booklets are available online at [short.mdc.mo.gov/Zzf](http://short.mdc.mo.gov/Zzf) or from local permit vendors.





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The gray treefrog is a small arboreal frog native to most of the eastern United States. Gray treefrogs are variable in color with the ability to camouflage themselves from gray to green depending on where they are sitting.

📷 by **Noppadol Paothong**